

Serial No.: 09/980,345
Group Art Unit: 1723

In the Claims:

Please amend the claims to read as follows (see Version with markings to show changes made):

1. (Once Amended) A Device for fractionating a mixture into its various components, wherein the device comprises separation elements mounted in series and in a closed loop, presenting alternating points of injection and points of drawing-off along the series of the separation elements, in which the closed loop is formed by four successive areas each constituted by at least one separation element, this device comprising at least one point of injection of solvent and one point of injection of diluent located between two respective areas, a point of injection of mixture, at least one point of drawing-off of raffinate located upstream of the point of injection of mixture, in the direction of circulation of the solvent, characterized in that:

- the solvent is a supercritical pressurized fluid,
- each of the separation elements is constituted by a membrane phase separation element,
- it comprises means for injecting the solvent at a pressure greater than its critical pressure, and for maintaining the pressure in said loop at a value above critical pressure,
- it comprises means for injecting the diluent and for maintaining the pressure thereof at a value similar to that of the solvent in each of the areas.

2. (Once Amended) The Device according to Claim 1, characterized in that the separation elements are constituted by a cylindrical envelope containing a bundle of hollow, permeable fibers, disposed along the longitudinal axis of the envelope and fluid inlet and outlet means, so that one of the fluids circulates inside the fibers and the other outside them.

3. (Once Amended) The Device according to Claim 2, characterized in that the fibers are constituted by polypropylene.

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4. (Once Amended) The Device according to Claim 1, characterized in that the respective pressures in each of the areas are such that the solvent power of the solvent in each area is maintained constant and is different from one area to another.

5. (Once Amended) The Device according to claim 4, characterized in that the solvent power of the solvent decreases in the direction of its flow.

6. (Once Amended) The Device according to Claim 4, characterized in that the enthalpy is maintained constant in all the areas.

7. (Once Amended) The Device according to Claim 4, characterized in that it comprises a pumping system in order to increase the pressure of the diluent between each area, in the direction of flow thereof, and a system for balancing the pressures of the diluent and of the solvent in each of these areas.

8. (Once Amended) The Device according to Claim 7, characterized in that volumetric pumps are used for circulating the diluent at controlled flowrates in each of the respective areas.

9. (Once Amended) The Device according to Claim 7, characterized in that the pressure balancing system is constituted by a balancing recipient associated with each area and which balancing recipients are connected to each of the streams of diluent and of solvent respectively entering and leaving each downstream area, in the direction of circulation of the solvent.

10. (Once Amended) The Device according to Claim 9, characterized in that the interface between the diluent and the solvent is maintained stable by means of a system for measuring the respective levels of the balancing recipients acting on the flowrate regulation of the corresponding pump.